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ON SEPTIC AND AUTO-INTOXICATIONS AS CAUSES OF DISEASE.

*An Address given to the Birkenhead Medical Society on
March 9th, 1894.*

—BY—

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Medica and Therapeutics at University College, Liverpool.*



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MR. PRESIDENT AND GENTLEMEN,

A firm belief on my own part in the septic origin of some diseases, and in the self-generated cause of others by means of a perversion of the normal chemistry of the organism; and in the necessity, not as I venture to think yet sufficiently appreciated by all medical men, of frequently uniting antiseptic methods with whatever other treatment they may feel called upon to employ, will manifest itself to you as I proceed, as the reason of this paper.

In the course of an inaugural address on the "Principle of Disinfection in Medicine," which I gave as President of the Liverpool Medical Institution in 1888, I stated my opinion "that every wound or scratch of the surface, however trivial, should be antiseptised." An extended experience has convinced me that much harm occasionally results from a neglect of this practice, and that illnesses of the greatest possible degree of severity and of long duration may be sometimes permanently and promptly relieved by putting it into operation. Without further preface I will relate some of these, and state what I conceive to be the particular lessons which they convey, and then ask your attention to some illustrations of auto-infection where no recognisable breach of surface has existed, but where the results have apparently been caused by some perversion of the normal chemical processes of

the body and to have disappeared where these abnormal processes were rectified by antiseptic methods.

On October 22nd, 1893, I saw, with Dr. Cowe, of Liverpool, to whom I am indebted for full notes of the case, a lad aged twelve, residing in that city. Dr. Cowe had first seen him on the 4th of the same month, and had then been informed that he had always been well until a week previously, when he caught a cold, which was attended with sore throat, and that on the 2nd he had had a severe shivering, and complained of ear-ache. The ear had begun to discharge on the morning of Dr. Cowe's first visit. He found his patient in bed lying on his left side, with his head covered with the quilt, and with the window blind drawn wholly down. When the quilt was removed from the head, the lad kept his eyes firmly closed, because, as he said, the light hurt him. His face was flushed, anxious-looking, and haggard, as if he was suffering pain, and the entire skin was hot and dry. He was unable to sit up to be examined owing to giddiness, and even the slightest movement intensified the head-ache, which was always present. Pulse 98; temperature 102° F.; respiration 24. The ear was freely discharging thin yellow pus. There was slight congestion of the throat, and both tonsils were enlarged, the right one, besides being the larger of the two, having also a superficial ulcer upon it. The cervical glands were not enlarged. The bowels had not been opened for three days; the urine was free from albumen. The lad was not known to have been exposed to any infection, and had no rash. Medicines and a warm antiseptic douche for the ear were ordered by Dr. Cowe, and the patient became soon sufficiently relieved to admit of a thorough examination, which established the fact that with the exception of the ear and throat, all the organs seemed sound. By the end of a week the discharge

from the ear had ceased and the throat was well. There was no head-ache, light caused no inconvenience, and the boy was then able to take pretty freely of liquid nourishment. But he was still giddy if he sat up, and was emaciating rapidly. The bowels continued very costive, never acting except after medicine. The temperature ranged from 98.6° in the morning to 101° in the evening, and he became steadily weaker each day. Firstly, chlorine and then quinine were prescribed, and the latter was taken well. What was the cause of these continuing symptoms? As day by day passed by, it became less and less likely that they were due to an unusual prolongation of any of the infectious fevers, or to their recognised sequælae, the alternatives that had presented themselves to Dr. Cowe's mind at last being tubercular meningitis, cerebral abscess, or possibly typhoid fever, to each one of which, however, there seemed to be objections. I saw him with Dr. Cowe on the afternoon of the 23rd, and, although, as I believed at the time, my examination had been extended to all probable sources of septic infection, I was obliged to confess in the end that there did not seem to me to be any positively recognisable source of the septic poison, from which, nevertheless, he was undoubtedly suffering, and I could only suggest a steady perseverance in the plan of general antiseptic treatment which was being employed, and a sharp look-out for any further developments that might throw light on the case. Three weeks later Dr. Cowe called on me and reported that the symptoms had continued with the same intensity as when I saw him; that the emaciation and debility had become greater than he thought he had ever seen, and that he did not think the boy could live many days unless something could be done to give him relief. In the course of our conversation he told me that the mother of the lad had informed him

some few days previously that the boy had picked his nose and pulled away a little yellow, stringy matter, after which a few drops of blood had followed, but that the nurse knew nothing of the circumstances. Dr. Cowe had examined the nostril in ordinary light, but seeing nothing abnormal, and finding that air passed freely in and out of the nose, and that there was no unpleasant odour, had concluded that the incident was of no importance. In the full belief, however, that in this trivial fact, accidentally, as it seemed, mentioned in conversation, we might have the key to solve the puzzle that had perplexed us, I begged Dr. Cowe once again to examine the nostrils, using a powerful light and speculum, and whether he discovered any ulceration or not, thoroughly to cleanse the nostrils by a warm antiseptic douche or antiseptic powder or both. He did this, and reported to me some time afterwards that he had discovered high up two small ulcers, one on either surface of the septum, each covered with yellowish, stringy pus; that he had forthwith made a warm solution of boracic acid by means of which he had himself thoroughly irrigated the nostrils, and had instructed those in attendance how to continue the irrigation four times daily; and that, finally, he had told the lad to snuff powdered boracic acid well into his nose midway between the irrigations. You will remember, if you please, that the septic fever had continued day after day with scarcely any intermission for many weeks; that the death of the boy, in the judgment of the medical man who was constantly and anxiously watching him, seemed imminent; and when I state, as Dr. Cowe has stated to me, that from the very moment that he carried out this local antisepticism, which was the only change in treatment, the temperature fell to the normal, and that, to the present time, it has never risen above it; that he had at once begun to manifest signs of improve-

ment, which improvement was uninterrupted until he completely gained his health; and that his health has continued perfect ever since, you will probably believe with him and me, that the septic poison was generated on the site of the ulcers, which constituted also open doors through which it could gain ingress to the general system, and that the thorough cleansing of these ulcers had cut off the poison at its source, and had led to the cure.

I have only to remark that there had been nothing in the boy's manner of breathing, or anything connected with him, that had led to the suspicion of a lesion of the nasal mucous membrane. But after he became well, the mother informed Dr. Cowe that occasionally he had in health small bleedings from the nose. The probability, therefore, I think is, that he had had slight ulcers; that, so long as he remained well, these did not trouble him beyond the little occasional loss of blood; but that, during the tissue-change effected by his initial throat and ear disease, of whatever nature that disease may have been, these had assumed an infecting character, which had been retained.

Perhaps the following case will help to strengthen the probability that the explanation was a reasonable one. It is one of several, which, as I mentioned to Dr. Cowe, had come recently under my observation, and which had prompted me to urge very strongly upon him the adoption of the means detailed above.

The patient, a minister of marked ability and great common sense, was the brother of a well-known Liverpool medical man, by whose wish I saw him in 1892. He was under the regular care of Dr. Craigmile and of his brother. He had been failing in health for some time before coming to see me, the chief symptoms being loss of appetite, debility, and brief lapses of memory when in the pulpit.

Considering that his condition was probably due to an overtaxed, nervous system, for there was nothing in the personal examination, or in the family history to suggest tubercular tendencies, while, in addition to his ordinary ministerial duties, there had been prolonged and severe literary labour, we agreed to recommend that he should give up all work and take a trip to the Mediterranean. He followed our advice, but the wasting which had commenced some time previously continued, and was now connected with such an absence of saliva as to prevent him from taking any dry food. At Constantinople, therefore, he consulted the doctor to the British Embassy, who prescribed for anæmia. He grew so much worse that, when the vessel was detained at Gallipoli by a fog, he found on going ashore that he could scarcely climb the hill, and that, on returning, he was completely exhausted. On reaching Malta, on the return journey, he had a little vomiting one night with streaks of blood, the vomiting being followed by jaundice. A medical man who was consulted concluded that he had cancer of the liver, and this opinion was confirmed by the doctor of the ship, who saw him professionally every day. He reached home on April 20th, 1892, and Dr. Craigmile saw him on the following morning. He was then quite jaundiced, the motions were white, the urine deeply bile-stained, and there was a slight swelling on the right of the epigastrium, but no enlargement of the liver. He was much emaciated and very weak. A few days later his brother, Dr. Craigmile, and I met. The symptoms were unaltered, and we thought it possible that a small growth of a malignant character existed in the head of the pancreas which pressed on the common bile-duct. At a later consultation, when the fulness and hardness at the epigastrium had disappeared, but fever of an intermittant type had become a

prominent symptom, we were obliged to abandon this hypothesis; but, although no mere mechanical pressure could explain the fever, it was by no means evident how it was produced except, perhaps, by malaria inhaled during the voyage, or an ulceration of the gall-duct with septic absorption. Quinine was given largely without influencing the course of the disease. Fever of a hectic type, as manifested by the charts (which I send round), was associated with progressive diminution of strength till, by degrees he became, first of all, unable to stand, and, at last, even to sit up in bed (to which he was now permanently confined), for the purposes of physical examination, without assistance. All this time the jaundice steadily persisted, without, however, any change in the liver detectable by a very careful physical examination. When, some time afterwards, I once more saw him, with his brother and Dr. Craigmile, it became painfully evident to us that he had not long to live. The emaciation and debility were such as are rarely known. From an average weight of about 10 stones 12 lbs., he had sunk to, it was believed, under 6 stones. He had, some time before this last visit, resigned his ministerial charge, there being no expectation in anyone's mind that he could ever resume it, and he would, at that time, have left the house, to the occupation of which, as a minister, he was entitled, but that his utter prostration rendered it impossible for him to do so. As it was, he remained in it only until death should release him. During the whole of the illness not a word had been said, nor had any circumstance been revealed to us, which had directed our attention to the nostril as a possible source of septic infection. It is more than likely that the persistent jaundice, as a prominent symptom, and the possibility of an ulcerated bile-duct being the door through which absorption might have

taken place, may have occupied our minds to the exclusion of other and less probable sources of infection. We were leaving the room, and had got to the other side of the bed from that on which my examination had been made, when I caught sight of a pocket-handkerchief stained with some spots of blood. This led to enquiries, firstly, from the patient himself, and later, and more expressly, from his wife, after we had left the room; as a result of which, we discovered that occasionally he had had bleeding from the nose; that every now and then he discharged, with some effort, a dry incrustation; and that sometimes this dry incrustation was followed by a little offensive sanious discharge, which would then cease, and there would be no further trouble for some time. In this simple fact we had, I believed, the solution of our very perplexing problem. The patient was far too prostrate for any further examination at that time; but it was agreed to urge upon him the necessity of immediate and thorough antisepticism of the nostrils, continuing, at the same time, the quinine and general tonic and antiseptic treatment which had all along been employed, and that, if there were any difficulty in having the treatment carried out, our opinion as to its necessity should be strengthened by that of a gentleman specially competent to explore the nasal cavities. There turned out to be more difficulty than we had anticipated. The condition of weakness was so extreme, and the will had become so enfeebled by prolonged illness, that the utmost disinclination was expressed to have anything more done, and it was only after an examination by Dr. Hunt, and his determination, under conditions favourable for complete examination, that an ulceration did exist, that antiseptic irrigation was submitted to. For a time this was very partial and interrupted; but, as the patient himself became conscious that, notwithstanding the trouble

it caused him, he was beginning to improve, there became less disinclination to submit to it; and eventually, after much difficulty and great perseverance, a complete cleansing of the nasal cavities was effected. Coincidentally with this thorough cleansing, all the symptoms abated. Day by day strength was gained, and now, for a long time, he has been quite well. I had, and have no doubt, that the cause of the septic fever was this unsuspected ulceration of the nasal mucous membrane. This opinion seemed corroborated by the fact, only afterwards discovered, that occasional remissions of its intensity corresponded with periods when crusts were discharged, and with the further very significant fact reported to me by his brother, on the 4th of last April, that after having relaxed the use of the douche for a time, a nasal catarrh was experienced, with a coincident appearance of the fever, which, however, promptly disappeared when it was resumed. On June 8th, 1893, he called on me. I then learned from him that his smallest *determined* weight was 6 stones 11 lbs.; but, as this was ascertained only after he had been up for some time, and had gained a good deal of flesh, the smallest actual weight must have been very much less, he thought a stone less. On the day of his visit to me, he was 9 stones 7 lbs., and was increasing every week. In the middle of 1893 he had reached 10 stones; and that the recovery has been an all round one, is manifest from the fact that, besides his ability to undertake abundance of physical strain, he has since written a large volume, requiring in its preparation much scholarship and research, as it is one of a series prepared by the best Biblical scholars and writers of the present day.

The symptoms that arise in connection with such cases as these which I have just detailed, are often of the strangest and most anomalous character. But instead of

leading the mind away from the true explanation, I am inclined to think that the intrusion of such marked anomalies into a case, characterised *mainly* by fever of a hectic type, should strengthen the conviction that some hidden source of septic poisoning does exist, and should quicken the effort to discover it, if possible. Of such symptoms, muscular twitchings, and even very alarming tetanic spasms, are not very uncommon. Thus, on the 24th of last month (February, 1894), a medical friend who resides at some considerable distance from Liverpool, came by appointment to consult me about his own health. I had not seen him for some months, and was much impressed by the change that had taken place in his appearance in the interval. He looked very ill, and was most anxious about his condition. What struck me immediately on seeing him was his pronounced anæmia. This was on the surface. What caused most concern, however, was the fact that for two months he had had a fever temperature, accompanied by a feeling of slight shivering every night, and both accompanied and followed by great depression. The morning temperature was normal or even subnormal. The extreme range was from $97\cdot2^{\circ}$ to $101\cdot5^{\circ}$, but frequently the highest point reached during a night was $99\cdot5^{\circ}$. He did not think he had lost much flesh. Not unfrequently the lower extremities were seized with such fearful cramps during the night that, although a man of courage, it was impossible to abstain from shrieking so loudly as to disturb the whole household. The toes, feet, legs, and thighs on both sides were thus tetanised, and the violence of the spasms may be judged from the fact that more than a week after the last attack the calves were very tender to the touch. He described the agony as being almost unendurable. To the physical torture was added the mental distress arising from an

apprehension of general tetanus. When I saw him, on the 24th, the knee reflexes were absolutely normal, and one could hardly imagine, from the then quiescent condition of the cord and the leg muscles, that but a few hours previously the lower extremities had been forcibly thrown into the horrible and prolonged spasms that had been endured. I made a particular request that the urine passed next after an attack of cramps, should these recur, should be forwarded to me immediately by parcel post, hoping to be able to possibly separate and determine the nature of the tetanising agent, which I had no doubt would be eliminated by the kidneys, or, at any rate, if the separation could not be effected, to have its action demonstrated by experiment. During the course of the illness he had been nearly jaundiced, which he explained by saying that bile had then disappeared from the stools and appeared in the urine, while his feeling of general depression was intensified. Heart, lungs, kidneys, and nervous system were healthy, and I was able at once positively to assure him, in view of all the facts, that any fear of tuberculosis might be dismissed; but that he was probably the subject of septic absorption from some source. "What is the matter with your nose?" I asked, being struck with the nasal character of the intonation. "There is nothing the matter with my nose," was the reply; but he informed me that he was annoyed with an ulceration in the neighbourhood of the anus. I expressed a wish to examine the nose, and discovered a small ulcerating polypus in the right nostril. As he had not been aware of the existence of this, and as it did not trouble him, he was surprised that I should think it, rather than the rectal lesion, could have anything to do with his symptoms. Such, however, was the opinion which I expressed, after a careful examination. I told him it was of no use to prescribe medicines, as I

felt certain that he was suffering from septic infection, and almost certain that one or other or both of the places that I have mentioned were the sources of that infection, and that, if he had these properly attended to, he would not need any, while, if he did not have them attended to, none would do him any good. I simply suggested that he should take, for his anæmia, a sandwich of an ounce or two of finely shred raw beef night and morning. The difficulty, in his mind, was that the rectal trouble had existed for years, while, possibly, the nasal lesion, though unsuspected by him, might also have been present equally long. The question arose, "How it was that a permanent cause had not been followed by a permanent effect?" The answer is easy. Such sores may always *become*, but may not always *be*, infecting. The sequel is interesting. I advised him at once thoroughly to cleanse the nostril by means of warm boracic solution and the insufflation of boracic acid. The rectal trouble he decided to submit to his old friend, Mr. Teale, of Leeds, so soon as he could make it convenient to see him. A few days later he came to Liverpool again, and told me that, though he had not yet been able to have anything done to the rectum, the fever had entirely ceased from the moment of cleansing the nostril; that he slept the whole night through; and was conscious of a very great change in his condition. One week later he called again to inform me that he had seen Mr. Teale, and that he was to make an arrangement to have both lesions surgically attended to; but that, as he had felt absolutely well ever since commencing the antiseptic application, he was disposed to postpone any operative interference for the present. I was unable to test the effect of the urine as cramps had never once occurred since the antisepticism had been carried out.

But I think that our efforts should go beyond merely seeking to destroy or neutralise septic poisons introduced from without. The organism itself is a great laboratory, in which poisons, strictly analogous to and sometimes absolutely identical with those obtained by the chemist from the decompositions of animal substances, are being at times produced in sufficient quantity to be dangerous to health; and we must at least aim at preventing any undue formation of these, or of neutralising them when formed. Thus, by a somewhat curious coincidence, on the same day, and at the same hour, as the gentleman whose case has just been briefly described, came to see me, there came also a lady who was his immediate predecessor in my consulting-room, and who complained of a troublesome and somewhat chronic rash of an exceedingly irritating character. Accompanying this rash, existing only since it had existed and never before were occasionally recurring and very painful cramps of the arms and legs. The tetanising principle in this case was not absorbed from without, but generated within by some perversion of the normal chemistry of the body; and I requested, in her case also, that I might be supplied with some of the urine voided immediately after the occurrence of such cramps. Nature seemed to be making an effort to eliminate through the skin a noxious principle, which, when retained, manifested its poisonous effects on muscles or nerves by existing cramp. Several days passed, and no urine came. Then a sample was sent to me by parcel post, the patient living some distance from Liverpool. It was perfectly sweet, and I took it to Professor Gotch explaining to him the case, and my belief that a tetanising principle was being formed, and that it would probably be eliminated through the kidneys, and asking him if he could help me in determining the fact. Thinking the

matter of sufficient importance to warrant further enquiries, he, with the assistance of Dr. Drysdale, was good enough to introduce 10 ccs. into the peritoneal cavity of one guinea pig, and 30 ccs. into that of another. This was at 4 p.m. The introduction did not seem to cause any pain, and the guinea pigs ran about and fed as though nothing had happened. At 10 next morning, however, the one who had had the larger dose died, after a series of tetanic spasms, while the other was beginning to develop tetanic symptoms, and died of them in the evening.

In order to control this experiment, two other guinea pigs were injected in a similar manner with two several quantities of 10 ccs. each (one previously boiled and one unboiled) of the urine of a young gentleman who was well except for occasional attacks of asthma. The urine had been voided next after an asthmatic paroxysm. The guinea pig which received the ~~un~~boiled portion of urine soon manifested a series of disturbed respirations, which Professor Gotch, whose attention I called to them, considered to be due to hiccup from peritoneal distension. Those soon passed off, and then, like its fellow guinea pig, which had manifested no such symptoms, it was quite well, and remains well now many days after injection.

Are we able, in any case, to form an approximately accurate opinion concerning the chemical nature of these abnormal products, and then of correcting the perverted internal chemistry which leads to their formation? In some cases I think we are, for occasionally it happens that such products, instead of being tetanising, are powerfully narcotising, and reveal their true character either by their odour, or some special reaction. As I pointed out in the address previously referred to—"A substance possessing the power of bringing about a direct union between sulphur and hydrogen at ordinary temperatures, is very

widely diffused throughout the living tissues and cells of animals, and when we remember that the end product of the oxidation of hydrogen, namely, water, is absolutely harmless, but that the corresponding product of the combination between sulphur and hydrogen is extremely poisonous, and when we further bear in mind that we always have within us a substance capable, under favourable conditions, of rapidly determining this latter combination, we shall see the importance of possessing the means of repressing its activity on the one hand, while we promote that of oxidation on the other."

I shall best illustrate this by again briefly describing a case. On September 7th, 1892, I was asked to see, with Dr. T. B. Grimsdale, a young married lady, seven months pregnant of her first child. The symptoms generally were those of septic fever, but very prominent among them were intense head-ache and so much drowsiness, that it was difficult to arouse the patient into sufficient wakefulness to admit of her being examined. There was no jaundice; yet very little, if any, bile was discharged in the motions. But what struck us most of all was the horribly offensive character of the urine. It was acid, and smelt very strongly of sulphuretted hydrogen, while a lead paper suspended in the upper part of a bottle containing some of it, was instantly blackened. We could obtain no evidence whatever of an external cause of septic infection, and came to the conclusion, which we expressed to the husband, who, by-the-bye, was a scientific man conversant with chemical processes, that the cause of all the symptoms was auto-intoxication from a perverted chemistry, the special poison being probably a volatile sulphur compound resembling, and possibly being, hydrogen sulphide; and that, if this poison-making process could be stopped, things would right themselves. Calomel, chlorine,

and quinine, with a sulphur-free diet, were given, and the symptoms soon began to mend. After a time the patient was removed to the country, delivered in due time of a living child, and has remained well. It would weary you to describe the numerous experiments made with this urine with a view to guide us as to the best disinfectant. The final result was that a minute trace of chlorine, as might have been expected, was most efficacious in deodorising it; and this I believe to be one of the most practically useful agents in correcting the condition on which the formation of these volatile compounds of unoxidised sulphur depends. Another is calomel, which, even in minute doses, seems to act beneficially. The presence of such compounds can always be detected by suspending in the upper part of a bottle, half filled with urine, a moistened lead paper. I have been in the habit of having this test applied for a long time at the Royal Southern Hospital, as well as in private practice, with the result of not unfrequently obtaining proof of the existence of such compound, and of beneficially applying remedies in consequence. The determination of the relative amounts of oxidised and unoxidised sulphur respectively in the urine is a somewhat tedious, but by no means difficult, work to any one who can give to it the necessary time. It consists in getting out the amount of sulphur as sulphuric acid in a given quantity of urine by the ordinary volumetric method, then in oxidising all unoxidised sulphur in another equal quantity of urine by means of one or other of the oxidising agents, and again determining the amount of sulphuric acid. The difference between the two determinations gives the required quantity. The method takes too much time to be available for medical men generally; and, moreover (as everyone knows who has practised it), requires caution, if such an oxidiser as permanganate of

potassium is used, the combination occasionally then taking place with explosive violence, unless but very small additions are made at a time, and the heat frequently withdrawn. I am tempted to trespass still further on your patience by one additional very recent illustration of what I believed to be a case of auto-infection from internally generated poisons, in which, whether that view were correct or not, the application of antiseptic methods was immediately followed by relief. A few weeks ago I was requested to see the senior porter of the Royal Southern Hospital, and one of its most valued officers. He looked and felt ill, and informed me that for an entire year he had never been a single day without boils. There was a large one, of a carbuncular character, at the back of the neck: and another, which caused him excessive pain, was just forming in the meatus of the right ear. I told him that he ought to leave the hospital at once; but, as there was a difficulty in getting a substitute for a few days, I prescribed for him a very strong solution of chlorine and quinine, which was to be taken frequently. I saw him either the next day or the next day but one, and found then (a circumstance which had never occurred before) that the boil in the right meatus had aborted, while the one at the back of the neck was rapidly healing, and but for my insisting on the necessity of change of air, he would have remained at his post.

How often it is the case that the discovery, *post-mortem*, of some ulcer of the bowel or of one of the gland ducts, the existence of which was not even suspected during life, throws a backward illumination on mysterious inflammations of the lungs, pleura or pericardium. A single fact of this kind should justify the adoption of antiseptic methods in every disease where internal ulceration is likely to occur. To this I can fancy that I hear the

objection that a disease dependent on ulceration of an internal mucous membrane, which is probably commoner than all other diseases—I allude to chronic ulcer of the stomach—is never followed by general septic infection. Yet, on reflection, this apparently startling exception to the general rule will be found, I think, to establish and not to invalidate it. Let us contrast these two sets of facts, and enquire:—

“How is it, then, that while chronic ulceration of the lower bowel, of the small intestines, of the nostrils, of the pulmonary mucous membrane, are all liable to be followed, and, as matter of fact, *are* often followed by fever of a hectic type, indicative of general blood poisoning, and that gastric ulcer, commoner than all of them, is never so followed?” The answer is probably to be found in the fact that the normal secretion of the gastric mucous membrane is powerfully antiseptic, and that thus injurious effects are often prevented. And when the ætiology of gastric ulcer comes to be fully written, as it some day surely will be, we may be taught that the affection illustrates the importance of antisepticism in yet another way, viz., by showing that it is nearly always, if not always, caused by the agency of microbes which make their way from the uterine or vaginal mucous membrane, and attack the stomach from below.